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European Telecommunications Conference
Strategic Planning for the 1990s

J.F. Blackburn

29 June 1990

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European Telecommunications Conference

Strategic Planning for the 1990s

Introduction

The European Telecommunications Conference Strategic Planning for the 1990s, held in Brussels, 9-10 May 1990, provided information to delegates and their companies on strategic planning for the European market, particularly after the advent of the European Single Market at the end of 1992. The conference objective was to examine the impact of the initiatives of the European Commission (EC) and the changing attitudes to service provision by public and private sector organizations on industry and marketing.

Organized by Blenheim Online and Logica, 40 delegates attended this conference, mainly from Europe, but with a few from the U.S. The papers were designed to illuminate such questions as emerging market sectors, impact of U.S. telecommunications organizations in Europe, mergers and acquisitions, standards, and value-added services. Brief summaries of the 15 papers presented are given in the following paragraphs.

Developing the European Single Market

Four papers were presented in this sector covering the open network provision, business applications, the global context of the market, and the opportunities provided.

Open Network Provision: Towards a Single Market for Telecommunications Services in Europe, Cor Berben, Commission of the EC

On December 7, 1989, the Council of Ministers of Telecommunications reached an important agreement that resulted in the adoption of a common position on the Open Network Provision (ONP) framework directive on February 5, 1990. A compromise was reached on a Framework Directive for ONP, and on the substance of the phased introduction of competition in the area of telecommunications services.

Both issues result from the Commission's Green Paper on Telecommunications, published in June 1987, endorsed by the Council of Ministers (Council). The Commission adopted the first proposal for ONP in December 1986, and at the same time adopted a draft proposal for a Services Directive based on Article 90 of the Treaty of Rome. The program for a new regulatory framework, as proposed in the Green Paper, has been largely com-

pleted. Accordingly, implementation of these proposals is the next phase.

Open Network Provision

The aim of the ONP Directive is to facilitate open provision of advanced EC-wide telecommunications networks and basic services, and the simulation of a dynamic market in value-added services through fair competition. The ONP Directive provides a framework for harmonized technical interfaces for conditions for use and tariff principles. Implementation will be in collaboration with the European Telecommunications Standards Institute (ETSI).

The Service Directive

The basic concept of the Service Directive is that monopoly rights will be abolished for all services except for voice telephony and the network infrastructure. The Directive does not apply to the telex services, and for the basic data communications services, a transition period is foreseen to the end of 1992.

At a meeting of the Council on December 7, 1989, the European Commission (Commission) agreed to modify certain aspects of the Services Directive as follows:

1. The Commission agreed to change the date in a clause (which states that the transitory period during which the simple resale of capacity may be prohibited beyond December 31, 1992, to January 1, 1996) in those members where the public data network has not been sufficiently developed.
2. This change concerns the set of obligations that may, under certain conditions, be imposed by a member on private service providers to the extent that it is necessary to safeguard the operation of services of general economic interest that have been entrusted to a public undertaking in the sense of Treaty Article 90(2). Such an obligation can only be used in basic packet- or circuit-switched data transmission, only if the activity of competing service providers risks obstructing the performance of particular tasks assigned to the national Postal, Telephone, and Telegraph Administration (PTT) in question. The obligations must be objective and nondiscriminatory, and may concern permanence, availability, and quality of service.

The introduction of Open Network Offerings should ensure there will be uniformity in the usage condition and tariff principles, and that the technical interfaces will, as

by J.F. Blackburn. Dr. Blackburn is the London representative of the Commerce Department for Industrial Assessment in Computer Science and Telecommunications.

far as possible, be common throughout the members. This will permit public service operators to provide their services in a manner that allows free and fair competition between all operators. Thus, ONP will stimulate developing value-added services throughout the EC and, in particular, developing pan-European value-added services.

Business Applications for the 1990's, Eurfyl ap Gwilym, GE Information Services, U.K.

In the post 1992 barrier-free Europe, businesses that hope to remain competitive will need to exchange more information with more trading partners, clients, dealers, distributors, and service providers. Mergers, joint ventures, and alliances being formed, not only within Europe, but also with companies based in the U.S. and Japan, will make the need for global communications imperative.

With the affordable and efficient tools now available and becoming available, business people will increasingly run applications from computers sitting on their desks. These powerful personal computers and workstations will be linked into a local area network that enables sharing of data.

In the 1990s, businesses will use global networks extensively, but they will use them in different ways. Increasingly, we will see cooperative processing. Applications will be run from the desktop when it makes sense. Networks will be used for transaction intensive activity and to access data that requires centralized, highly secured storage.

In the nineties, electronic mail and video conferencing will become staples of every global business. Provision of these basic telecommunications services will see competitors in other market sectors becoming partners. Higher, value-added services will be more vertically focused, meeting the unique business needs of industries. Electronic data interchange will be a standard business practice as will electronic payment systems, but applications will be tailored to the operational needs of individual industries.

The trade and transportation industries will be greatly affected by a deregulated European environment. The volume of transborder trade traffic will increase dramatically. We expect to see companies using network-based business applications to increase efficiency and offer competitive service to their clients.

Customers in the retail trade are demanding higher levels of quality, service, and value. Retailers must react quickly to consumer trends and embrace electronic data interchange to retain competitive advantage.

In manufacturing and distributing, deregulation will push companies to manage distribution channels more efficiently to serve their clients better. Electronic data interchange will increase efficiency.

The emergence of computer literate senior management and increased deregulation will mean that management attitudes and conservative regulations will lose

much of their force by the end of the nineties. This will lead to more dynamic use of network information services.

European Telecommunications in a Global Context, Martin White, Information Research Group, Logica, U.K.

Tables 1, 2, and 3, provide information about world telecommunications market dimensions.

Table 1
World Telecommunications Equipment Market
1989

| | (\$ billion) |
|----------------|--------------|
| United States | 31 |
| Western Europe | 30 |
| Japan | 11 |
| Rest of world | 22 |
| Total | 94 |

Table 2
Western European Telecommunications
Equipment Market
1989

| | (\$ billion) |
|----------------|--------------|
| Germany | 6.5 |
| Italy | 6.0 |
| France | 5.8 |
| United Kingdom | 4.8 |
| Spain | 2.1 |
| Sweden | 1.1 |
| Rest of Europe | 3.7 |

Table 3
Leading Telecommunications Equipment
Vendors
1988

| Company | Country | Sales (\$ billion) |
|------------------|-------------|-----------------------|
| AT&T | U.S. | 11.5 |
| Alcatel | France | 9.0 |
| Siemens | Germany | 7.7 |
| NEC | Japan | 6.1 |
| Northern Telecom | Canada | 5.3 |
| Ericsson | Sweden | 3.7 |
| Motorola | U.S. | 3.1 |
| IBM | U.S. | 2.9 |
| Fujitsu | Japan | 2.5 |
| GTE | U.S. | 1.8 |
| Bosch | Germany | 1.7 |
| Phillips | Netherlands | 1.5 |
| Ascom | Switzerland | 1.4 |
| Total | | 58.2 |

The above 13 companies represent more than half the total trade in telecommunications equipment. In 1988, Western European-based vendors had sales of around \$40 billion, about 45 percent of the total world market.

Table 4 provides balance-of-trade figures and shows why the Commission is concerned about the situation regarding Japan.

Table 4
European Community Telecommunications Equipment Imports and Exports

| | Percentage | |
|---------------|------------|---------|
| | Imports | Exports |
| U.S. | 22.2 | 10.9 |
| Japan | 33.1 | 1.3 |
| EFTA* | 25.8 | 27.4 |
| S.E. Asia | 9.3 | 4.9 |
| Rest of world | 9.6 | 55.5 |

*Europe Free Trade Association

Table 5 shows the major cross-border acquisitions, investments, and joint ventures. In addition, Bell Canada, U.S. West, and Pacific Telesis have interests in the U.K. cable television industry.

Table 5
Cross-Border Acquisitions, Investments, and Joint Ventures

| Company | Partner | Country |
|-----------------|-----------------|-------------|
| AT&T | Philips | Netherlands |
| | Istel | U.K. |
| | Olivetti | Italy |
| | Italtel | Italy |
| | Air Call | U.K. |
| | McCaw Cellular | U.S. |
| Bell South | Tymnet | U.S. |
| | Mitel | Canada |
| | Infonet | U.S. |
| | Mobile Rundfunk | Germany |
| British Telecom | | |
| | | |
| PTO Grouping | | |
| | | |
| Pacific Telesis | | |

The importance of standards in achieving a European Single Market is now accepted, but ideally manufacturers and service providers would like to see an identical standard in both Europe and the U.S. This is not going to be easy to achieve.

Consider Government Open Systems Interconnect Profile (GOSIP). Although both the U.S. and the U.K. have well-documented GOSIP requirements using international standards, there are some fundamental differences. For example, within the network layer, the European approach is connection oriented. Conversely, the U.S. approach is connectionless oriented because of the widespread use of Transmission Control Protocol/Internet Protocol in the U.S.

There are many areas where the European market is developing differently from the U.S. market, including mobile data services, Integrated Services Digital Network (ISDN), managed data networks, and tariffing principles. The telecommunications industry must monitor these developments.

The Single Market for Telecommunications - the Opportunities, Alan Pyne, Program Director, BIS Mackintosh, U.K.

Much has been written from the idealistic perspective about the movement towards a European Single Market for Telecommunications. Governments and the PTTs alike will not easily abandon the sovereignty of the ever-expanding telecommunications markets of Europe. Very specific areas of telecommunication will be open to competition. This paper identified those areas where the biggest opportunities lie. These were quantified in terms of market size, and an evaluation was made of the effect of deregulation. Key participants and strategies for taking advantage of the market were also discussed.

The areas that were covered broadly were:

- Customer premises equipment
- Value-added services
- Pan-European services
- Cellular developments
- Political environment
- EC legislation status and time scales.

In end-user equipment, the EC has taken initiatives to:

- Open terminal equipment markets to competition
- Obtain full mutual recognition of type approval
- Establish the European Telecommunications Standards Institute
- Open the public procurement market
- Establish the principle that monopoly is not conducive to efficiency.

The areas of opportunity resulting from the European Single Market are because of economies of scale in production, marketing, and ease of entry into the market. The key to success lies in local presence, local knowledge, and understanding and speed of reaction.

People in the EC believe that the potential for teletraded services is greater than the equipment and network markets. There is significant interest in electronic data interchange (EDI), but there is user inertia. Specific targeting is the best approach. Public E-mail shows low growth by comparison to private E-mail. E-mail service in the U.K. market is by far the largest in Europe and is expected to grow by a factor of 12 by 1995.

France represents the major market in Videotex, a teleprocessing information system developed in France. The system now has:

- 12,000 service providers
- 4.7 million installed base
- 8.5 million installed base expected by 1995.

The services market must be application driven and it requires media education of users.

The established suppliers of Public Switched Data Network services in Europe are Alcatel, Siemens, Ericsson, and Northern Telephone. Also, AT&T is getting started in Italy.

The EC must supply more leadership and coordination in ISDN. There remains the question of demand for

it outside of the PTTs. Private communications networks present a threat to PTT's consumer market. There are expected to be 10 million subscribers in the U.K. by 2000. Distribution, convenience, and price are the key to success.

Trends and Issues in Service Development

The five papers in this sector dealt with the role of standards, the impact of standards on provision of services, performance assessment, vertical and horizontal service, and Europe-wide financial services.

Telecommunications and the European Single Market - the Role of Standards, Frede Ask, Deputy Director, ETSI, France

Ask explained the importance of standards in relation to the free movement of goods, the liberalization of equipment and services, and public procurement. He followed up with a brief explanation of the functioning of ETSI and the standards produced by ETSI.

Standards are crucial for the free movement of goods; otherwise, some countries might deny importation of certain types of equipment, invented safety, or technical reasons. However, if agreed standards exist, the Council or the Commission can issue a directive stating that no country may deny entry of equipment if the equipment conforms with acknowledged standards.

Concerning public procurement, rules must be established that assure that foreign manufacturers get a chance to deliver their equipment. Standards are the means of assuring that public procurements are run in a correct and transparent way. The standards produced by ETSI are voluntary standards. Making these standards mandatory is a function of the national government and the EC.

The Impact of Standards on Service Provision in the European Single Market, Michel Smouts, System Manager, Alcatel Bell Telephone, Belgium

The ISDN provides a good case study for the impact of standards on service provision. The idea of ISDN originated in standards organizations. The ISDN is a unique digital network able to provide the user with a wide spectrum of services from a single access interface.

The I-series recommendations included in the 1988 International Consultative Committee for Telegraph & Telephone (CCITT) Blue Book, provides principles and guidelines on the ISDN concept as well as detailed specifications of the user network and international interfaces. For ISDN, a wide range of services was considered in a coordinated manner. In the I-series recommendations, an important distinction is made between services and network capabilities. The I-series recommendations are an important step toward ISDN, but they contain many options. Also, some services and the corresponding network capabilities need to be further defined.

Recommendation 1.130 defines how, starting from the service definition, it is possible to define protocols and network resources for providing such services. The next concept was the provision of end-to-end connectivity to eliminate the cost and impairment caused by a series of analog-to-digital and digital-to-analog conversions in the network. A very general framework for this was published as Recommendation G705 in the Yellow Book of 1980. Table 6 provides principles adopted during an ensuing study period.

Table 6
Recommendation G705

Use of a separate channel (D channel) for user access signaling

Modularity based on 64K-bit/s channels (B channels) already used for digital switching

Definition of a subscriber interface, the basic access (2B + D) and the primary access (30 B + D, 2,048 Kbit/s in Europe, 23 B + D, 1,544 Kbit/s in North America)

Use of a passive bus offering several access interfaces (S reference point) for connecting up to eight terminals to a basic access single customer installation.

Based on these principles, the I-series recommendations were published in 1984. Unfortunately, these Red Book Recommendations were far from complete and each country started developing trial networks based on different interpretations and necessary complements to the Red Book. Now the Blue Book 1988, with more comprehensive standards is available. However, commercial offerings of ISDN, based on a variant of the Red Book, have been put into service. Considerable activity is now underway to complete, as soon as possible, the specification of protocols that are essential for ISDN implementation, namely the layer 3 of the ISDN user-network interface and the integrated service user part of SS No. 7. In Europe, the EC Green Paper, recommended strict requirements for standards applicable to network infrastructure and services, to promote European inter-connectivity. The Green Paper also recommended the creation of ETSI to coordinate the work of experts from administration and industry.

The ETSI now includes 12 technical committees, each with several subcommittees. In April 1989, 18 European countries belonging to Comite Europeene Postes et Telecommunications signed a Memorandum of Understanding (MOU) in order to introduce common interfaces and services for ISDN by the end of 1992. The ETSI formed a Strategic Review Committee (SRC) to define the services that must be a part of the first phases of the implementation of the MOU of ISDN. The SRC's report has been available since March 1989. To implement the program, ETSI established a special group called ISDN Standards Management. As of May 1990, 112 items of standardization were ready, 58 further items

are expected to be ready late in 1990, and 30 items would be for later completion.

Historically, the telecommunications world was one of networks, but the arrival of ISDN has shifted the focus to services. To keep the development cost at the lowest possible level, the standardization work should be done as soon as the technology is ready.

Assessing the Performance of Public Telecommunications Operators, Tim Kelly, Communications Policy Analyst, Organization for Economic Cooperation and Development (OECD), France

The OECD has recently completed an 18-month project to develop performance indicators for public telecommunications operators in 24 OECD member/countries. This paper reported on the findings of the study and highlighted growing disparities in the provision, pricing, and quality of telecommunications services. For many users, the bill is simply too high. The OECD report defined indicators: international tariff comparisons, tariff structure indicators, measures of service quality, and measures of productivity and efficiency.

The OECD's method starts with a hypothetical "OECD average user" against which actual users in different countries can be compared. For business users, the ratio between fixed charges and call usage charges was set at 20:80. For residential users, a similar model was developed, but with the fixed:usage ratio set at 40:60.

The business telephone shows an OECD average figure of \$930 through the range between Iceland (low at \$365) and Japan (high at \$1,501). For international calls, the range between the cheapest country (Australia at 82 percent of average) and the most expensive (Turkey at 126 percent) is less marked.

In mobile communications, the OECD average price for 860 calls of variable duration is \$1,132 per year (\$1.32/call) with fixed charges a further \$566. The Scandinavian countries stand out because of low fixed charges.

The OECD analysis considered leased line charges at speeds of 9.6 Kbit/s, 64 Kbit/s, and 1.5-2.0 Mbit/s. For example, Luxembourg has relatively cheap lines at each speed. Belgium has relatively cheap lines at lower speeds only, and Australia has relatively cheap lines at higher speeds only. Certain countries have very expensive leased line services at all speeds; e.g., Spain, Germany, and Italy. Overall, the ratio of prices at the different speeds is 1:3:16.

In packet-switched data services, the total bill for the OECD basket of services averages just over 10,000. Spain, the most expensive country, is seven times the value of New Zealand, the cheapest country.

On quality of service, the OECD, working with other international fora, has defined a small number of indicators:

- Waiting time/delivery precision
- Payphone density
- Call failure rate

- Fault reports per line
- Fault clearance by next working day
- Response time for operator service.

The report recommends that Primary Telecommunications Operators (PTOs) should disclose more information about the cost structures, usage patterns, and quality ratings of different services. Performance indicators are destined to remain an academic exercise unless they are taken up and used in the setting of targets by PTO management and regulators.

Vertical and Horizontal Service Provision, Sergio Jesi, Business Development Manager, Finmeccanica, Italy

The European Single Market requires efficient management of information and tools to increase competitiveness in a dynamic environment. This means telecommunications will increasingly influence our social lives. Therefore, telecommunications applications are necessary to meet the specific needs of different end users. A distinction must be made between domestic, public administration, and business sectors that have different telecommunications tools needs, and consequently between network services and product services. Domestic communications will increase with the spread of home banking, building automation, and Videotex. The public administration will try to increase its productivity by generating more services for people. The business sector will emphasize single applications to solve specific needs. In this context, telecommunications companies can focus their business in horizontal or vertical markets to build competitive advantages in single market niches, offering adequate services to end users (see Table 7).

Table 7
User Group Sectors

- Domestic sector with its primary need to communicate and the consequential need for lower costs
- Public administration with its primary need to communicate and to reduce costs and consequently to increase productivity
- Companies with an overall need to communicate, reduce cost, and increase productivity
- Companies whose success is critically linked to optimizing telecommunications methods; also use communications as a strategic tool in business management.

Domestic Market

The domestic market needs commodity services, including access to public and private services, such as Videotex. Also, the needs for this market will grow with the availability of more complex value-added services; e.g., special health or medical services.

Public Administration

Integration between the various local and multinational administrations would translate into more effective service and diminish the need for personnel devoted entirely to one or the other. Although the road to the future lies toward integration, obstacles hindering the process of integration are:

- Operators of one administration not allowed to access the archives of another
- Incompatibility between calculators and problems in accessing data banks
- Difficulties with technological upgrading of organizational structures and massive professional formation of personnel.

Value-added services should address the vast range of problems arising from social impacts, thus catering to the entire population rather than the single end user.

Business Sector

Advanced technology has made the telephone network the principal means of transmitting information. The explosive diffusion of (1) facsimile (FAX), (2) the envisaged complete digitalization of public switching, telephones, and networks, and (3) the decision to apply ISDN standards to the latter allowing voice/data/image transmission over a single carrier, make the telephone an invaluable interface between the producer and the market. Services with the greatest growth potential are Electronic Data Interchange (EDI), E-mail, and mobile communications. Recent studies indicate that EDI can lower operating costs as much as 10 percent. However, setting up links between different data processors in an open system requires solving rather complicated technical problems.

E-mail is one of the most widely used applications of value-added services in business and public administration, second only to data bank services. Surprisingly successful are various forms of mobile communications like cellular telephones, paging systems, cordless telephones, and possibilities in the air traffic sector. Telecommunications and commercial transactions are closely related today, as proven by the growing use of the telephone for selling (telemarketing), not only consumer goods but also industrial products. The market already offers PABXs featuring single cable voice/data commutation that may be linked in a way to appear as one single unit. This allows remote control accessing of computers or external data-banks and expanding processing capacities by interfacing with calculator links.

Europe-Wide Financial Services on Public and Private Networks, Robert McDowell, Independent Consultant, U.K.

This talk covered some of the findings of a long-term study of financial services communications in Europe. The findings particularly address the value of financial

services business for network service providers, especially the Public Telecommunications Operators. The result of this study includes:

- Market segmentation of communication uses and users and market size and expenditure values for each segment over a 10-year period for each EC member
- Individual country data (in the U.K., the finance sector share of all U.K. value-added services is more than 70 percent, and its share of international traffic is about 15 percent even though its share of gross domestic product is only 8 percent)
- Finance sector is a dominant user of data communications, especially data broadcasting
- Within financial services (in the U.K., data accounts for over 50 percent of domestic and international communications while in the other industries data tends to be about 10 percent or less of voice and data traffic). Transatlantic financial services traffic is more data than voice in terms of time
- International financial services traffic is mainly generated by wholesale banking and securities trading, and nearly one-third of all finance sector traffic is generated by the major banking groups, the continental European "universal banks," and the U.S. and U.K. banking conglomerates.

The work we have been doing in financial services communications, on volumes, values, and flows, in both domestic and international traffic, have been of particular interest to PTO's network service and value-added service providers.

Strategic Planning for the 1990s

There were six papers in this sector covering strategic partnerships, alliances, and joint ventures, strategy concerning value-added networks, U.S. marketing in the European Single Market, the view of AT&T, and the art of strategic partnerships.

Strategic Partnerships in Telecommunications, Hugh Jagger, Partner, Coopers & Lybrand Deloitte, U.K.

Strategic partnerships and joint ventures in European telecommunications have mushroomed in the last decade and are still increasing. The driving force is the rapid pace of change in the industry globally. Some partnerships are clearly set up to meet short-term strategic objectives, which may vary between markets. This implies a fluid situation, which requires special skills to manage. In addition, as partnerships cross geographic and industry boundaries, the relationships become more complex. Managers must understand the balance between collaboration and competition, and must evaluate and manage more diverse cultures. The risks of getting it wrong are high and are increasing with globalization. A systematic approach is now vital.

We anticipate cross-industry partnerships to be a growing feature of the nineties. Realizing the full potential of EDI, E-mail, on-line information, teleshopping, telebanking, teleports, and intelligent buildings, requires close coordination and cooperation between representatives in different industries. The possibilities are endless. However, there are significant challenges involved in choosing the right partners and making these partnerships work.

Alliances and Joint Ventures in Value-Added Services,
Giacomo Repetto, Director, New Ventures, Strategy & Development, Olivetti, Italy

The marketplace is becoming wider and wider; from domestic dimensions, it is quickly moving toward continental and global size. Such coverage and the necessity to face the competition, create the conditions for new, bigger, and stronger enterprises. To form such companies, managers discovered that alliances, joint ventures, and mergers are the simplest and fastest way to gain strength. The information technology (IT) industry, including the providers of information and value-added services, is more affected by this necessity, and day after day, we can see how deeply the shakeout is modifying the IT landscape.

Today, the economic development of successful enterprises is characterized by concentrations of companies through mergers and acquisitions and networks of alliances. This situation exists in all markets. With the possible exception of niche companies, it no longer makes sense to operate as an isolated entity, trying to design, produce, and sell autonomously the products and services required by the market.

The IT industry, as supplier of systems or services, is facing the several challenges of: global dimension of the markets, enhanced technologies, an interdisciplinary approach, new standards, and a growing market demand for integrated system solutions and customized applications. Offerings and market evolution demand companies that are able to face the race, adequate in their dimension and presence, and prompt to perceive the continuous changes of the customers needs.

The market after 1992 is a particularly important target for European industries. National champions will not survive as such. Europe must become one domestic market and existing domestic markets will no longer be sufficient for the newer big companies. In Europe, many companies are creating a complex network system to multiply contacts among different cultures and this will accelerate the integration.

The rationale for a joint venture is usually based on how well the partners' products, services, markets, technologies, or skills are complementary. Joint venture also requires a common will to develop new products jointly, services or technologies, or to open new markets. Joint ventures are mainly used by specific areas of cooperation.

One major issue and one of the main targets of the venture is for the venture to achieve its own identity.

The expected dramatic growth in the demand for value-added services will be promoted by several factors (see Table 8).

Table 8
Factors That Affect Value-Added Services Growth

1. Increasing diffusion of microelectronics technology products and their entrance into wider layers of the population
2. Ease of using new digital telecommunications infrastructures
3. Awareness of users that value-added services may help in saving time
4. Greater number of offered services.

Table 9 provides factors that will be accelerated by alliances and joint ventures.

Table 9
Factors That Affect Alliances and Joint Ventures

- Supranational commercial and social procedures
- New value-added service standards
- Acceleration of electronic data interchange
- Deregulation of international financial transactions
- Videotex systems interconnection
- Pan-European digital mobile telephones
- Deregulation of two-way satellite data transmission
- Diffusion of the portable office.

Among the consequences of the above situation are:

- National value-added services operators used to offer the same service, but running different protocols and standards, the process of unification will suggest consolidating efforts and resources to be strong and to scale down costs
- New niches will be located and targeted
- Supranational clearing houses will be formed with a variety of existing operators participating.

Which Strategy Concerning Value-Added Networks and Services: the Case for ISDN, Walter Baets, Consultant, Hoffman & Associates, Belgium

This paper covered the difference between strategy and tactics. Based on several assumptions, allocation models and cost models will optimize the network used for each telecom application. However, quality considerations of different types will eventually alter this economic choice. How much does it cost?

In a lot of companies, the telecommunications responsibility is on a tactical level. However, the question concerning ISDN should be: Does ISDN open new possibilities for us, does it add something to the com-

pany's profit, and does it allow management of the environmental change? Today we only ask the question: I have this type of telecommunications connection; would it be better (cheaper) to replace it with ISDN?

Let us consider three network types: (1) Public-Switched Telecommunications Network, (2) ISDN, and (3) leased lines. Then let us allocate six telecommunications applications to those networks: telephony, bulk data transfer, interactive data support, financial transactions, document interchange, and message interchange. The question is how to optimize the use of the different networks for the different applications (see Table 10).

Table 10
Telecommunications Parameters and Model Assumptions for Specific Applications

Parameters

Geographical spread of traffic
Basic information about volume of traffic per application
Fixed-point traffic
Cost structures for network and applications relative to a starting point structure
Network availability.

Model Assumptions

Number of lines - real
ISDN relevant unit - 64 Kbit/s
Time unit - 1 year
Full use - 50 percent occupation
Entrance fee - ignored
Applications - considered separately
Switched lines - 4,800 bauds (full duplex)
Leased lines - 9,600 bauds (full duplex, quality 1025)

Based on the above assumptions and parameters, six allocation models run simultaneously. They allocate the different networks to each application in a cost-effective way, based on the theory of traffic modeling. The applications can be related to either:

- *Hold line* - quantity of information transferred is low; you only need to use the line occasionally, but always available
- *File Transfer* - debit, speed, and quality are important
- *Mixed Applications* - hold line while interactive volume is less important, link had to exist continuously.

The best solution from a technical viewpoint must be compared with the cost structure and possibly be adapted. Finally, the solutions for all of these models, and the possible combinations behind it, are translated into proportions. Further, many objective and subjective quality considerations may need to be considered.

U.S. Marketing of Computers, Telecommunications, and Microelectronics in the Single European Market of 1992, J.F. Blackburn, Industry Assessment Officer, U.S. Department of Commerce

This paper covers some of the advantages of the European Single Market to European manufacturers, service providers, and users in computers, telecommunications, and microelectronics. The paper also discusses the advantages it offers to American and other non-European manufacturers and service providers in the European market. However, it also presents some of the potential difficulties that may arise from EC standards and conformance testing regulations.

Recent changes in the European computing and telecommunications fields have resulted from:

- Merging these two industries, made feasible through developments in microelectronics
- Recognizing that introducing more competition, particularly in the telecommunications industry, might lead to greater innovation in providing products and services
- Renewed interest on the part of the EC in carrying out the project laid down by the 1957 Treaty of Rome.

The above factors led to the launching of the programs by the EC such as ESPRIT, RACE, BRITE/EURAM, and the broader European program, EUREKA. In parallel with the Europe-wide programs, the individual national governments also increased their emphasis on programs of research in these fields.

The arrival of the European Single Market at the end of 1992 will simplify many activities for both European and non-European suppliers of equipment and services. A major simplification will be using common standards for such products, which will enable producers to develop products to one standard rather than a dozen or more. This simplification carries over to marketing and servicing of products sold in Europe.

On the other hand, European manufacturers will no longer have a fully protected market in their own countries, but will have to compete on a Europe-wide or a world-wide basis. This will increase the cost in manpower and money in marketing and service. However, there should be considerable saving in product developing and manufacturing resulting from common standards.

As for American and other non-European manufacturers and suppliers of services, an additional problem may arise through lack of early knowledge of product requirements and lack of participation in the determination of standards. This problem can be overcome through their participation in European development programs like ESPRIT and EUREKA, and this is now taking place to some degree. Another issue that non-European manufacturers need to face is that of manufacturing in Europe. This is already done to a very large extent in the computer industry, but to a much lesser degree in telecommunications and microelectronics.

Regional Bell Operating Companies Strategies for Europe, Edgar Brown, President, Bell Atlantic, Europe SA, Belgium

Growth and change in the telecommunications industry, fueled by increasing competition and technological advances, are having global effects. More and more, network operators, or PTTs, worldwide are facing common issues and sharing common goals. At Bell Atlantic, we see many opportunities for cooperative efforts with PTTs. Bell Atlantic's corporate vision is to be a leading international communications and information management company.

Bell Atlantic was formed in 1984 as one of the seven regional holding companies established with the breakup of the Bell System. The core of our business is the provision of voice and data communications and exchange access service in one of the most communications-intensive regions in the U.S. Bell Atlantic's other key products and services include Bell Atlantic Directory, which produces over 260 Yellow Pages and White Pages Directories. In addition, Bell Public Communications provides coin and charge pay telephone service through the Bell Atlantic region and nationwide. Table 11 provides other Bell Atlantic telecommunications-related activities.

Table 11
Bell Atlantic
Other Telecommunications-Related Activities

- Independent computer maintenance and service operation
- Financial services business that meets equipment leasing needs from copiers to wide-body jets
- Range of communications systems and software businesses
- Bell Atlantic Mobile Systems company - the largest cellular carrier in the U.S. Mid-Atlantic region.

Table 12 provides a few examples of international opportunities that exist for Bell Atlantic.

Table 12
Bell Atlantic
International Opportunities

- Telecommunications privatizing and liberalizing activities in Europe and in the Asia/Pacific area offer excellent opportunities to market our skills and software systems
- Recent events in Eastern Europe, the growth of the Asia/Pacific area as a major factor in world trade, and the state of the communications infrastructure in other regions of the world offer opportunities for designing, building, and operating large, complex communications networks, both landline and cellular.

Our international strategy is to offer a broad range of network software products, telecommunications consulting, and systems integration services, based on the skills from our core business. We made a strategic decision to partner with the PTTs rather than to compete with them.

We have announced a large system for the implementation of Trunks Integrated Records-Keeping System in Spain for Telefonica. Working with IBM-Spain, we will provide an integrated database and software system to manage telephone network facilities. With PTT-the Netherlands, we have a contract for the installation of the Total Data Network Systems for trunk forecasting and network surveillance in three pilot districts in the Netherlands. Also, we have completed an agreement for the sale of Centrex software to British Telecom.

Product line extensions of our business is provided in Table 13.

Table 13
Bell Atlantic
Product Line Extensions

- Through our Sorbus computer maintenance companies in the U.K., France, Italy, Federal Republic Germany (FRG), Austria, and Switzerland, Bell Atlantic is providing high-quality maintenance and related services on equipment ranging from point-of-sale terminals to IBM system 34/36 minicomputers to mainframe computers
- Bell Atlantic Eurotech companies in France and Italy operate as suppliers of networks and data communications equipment. Their products include X.25 packet switching equipment, voice/data multiplexers, and network control systems
- Bell Atlantic also offers a wide variety of specialized lease financing on computer and peripheral equipment through the Bell Atlantic Financial Overseas Corporation, with offices or agents in the U.K., France, Italy, the Netherlands, the FRG, and Switzerland.

Partnerships - the Art of the Possible, Thomas E. Whidden, Vice President, Infonet Services Corporation, Belgium

Today, no company attempting to put its global opportunities into perspective can afford to ignore the changes already occurring in the EC as it moves toward its unification goals of 1992. The bases of competition are changing and creating profound implications for those who accurately anticipate and adapt to change in the next several years. Infonet's unique partnerships with PTTs and telecommunications administrations around the world were reviewed. Establishing themselves in the large EC market will help many non-European companies strengthen their position in their domestic market and other world markets. The limiting factor to the window of opportunity here is time.

Infonet Services Corporation took advantage of business opportunities and worked steadily toward international partnerships. As a California-based company with

almost 20 years of doing business internationally, Infonet has found that language and cultural differences mandate a local presence and that will not change after 1992.

Infonet's original partnerships with various telecommunications administrations began in the early 1970s. The initial motivation was to enable Infonet to provide an enhanced level of service and support to the client base. Infonet found that the key to developing partnerships is to choose partners who share a common direction.

Partnerships provide a ready-built expertise in doing business within each country and they provide an in-country distribution channel that is already familiar with the potential market. In the early 1980s, Infonet formed joint ventures in France, Scandinavia, and Spain with the PTTs. These joint-venture companies are responsible for

supporting all Infonet clients within their respective countries, regardless of the location of the headquarters.

Today, Infonet has partnerships in 32 countries, of which 18 are partnerships with the local PTT. At the same time, Infonet plans more partnerships. The Infonet in-country partnerships provide the local expertise by local markets and sales support functions. However, the Infonet corporation directs the control for the international platform of products and services requirements. Infonet is convinced that its unusual partnership is a highly effective method for dealing with a united Europe. The partnership helps transcend trade barriers, provides distribution channels, and offers the heritage and expertise in the market that a new player cannot bring to the table.